

FUSE, ALARM AND DISTRIBUTION PANEL (FADP), 628490

OPTION SELECTION, INSTALLATION AND PRETEST

This Section provides procedures to select options on, install, and pretest the ITT D448 fuse, alarm and distribution panel (FADP), 628490. This Section is mainly intended to be used when the FADP is being installed in a rack by the customer. To wire a FADP in a prewired bay, refer to Section ITTR-18-404.

This Section has been reissued to add a reference to the 20-Hz fuse installation kit and to define the need for separate talk battery wiring.

Option selection consists of selecting ringing options on the alarm and ballast unit (ABU-2), 628496, and strapping options on the backplane of the FADP. Installation of the FADP consists of mounting the unit in the rack, connecting all external wiring, and installing the ABU, 628494 or 628496, into the FADP. Pretesting the FADP checks the operation of the alarm circuits and the accuracy of the wiring to the distribution circuits.

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CHART 1

INSPECTION

APPARATUS

None

STEP

PROCEDURE

- 1 Remove equipment from shipping carton.
- 2 Perform an inventory to verify that all equipment listed on packing list is present.
- 3 Inspect the equipment for shipping damage. Report any damage to carrier immediately.

CHART 2
MOUNTING

APPARATUS

Standard hand tools as required (see Section ITTR-18-400)

Mounting hardware as required

STEP	PROCEDURE
1	Position FADP at desired height in relay rack.
2	Secure FADP to relay rack using four 12-24 screws (not supplied with equipment).

CHART 3
OPTION SELECTION

APPARATUS

Standard hand tools as required (see Section ITTR-18-400)

STEP	PROCEDURE
Note 1: If ABU-1, 628494, is being used (where negative superimposed ringing is required and available), proceed to Step 3. If ABU-2, 628496, is being used (where negative superimposed ringing is required but not available), proceed to Step 1. Note 2: Refer to Fig. 1 during Steps 1 and 2.	
1	To supply terminals 1 through 4 with 20-Hz negative superimposed ringing when supply connected to FADP is 20-Hz ringing, cut strap E13 to E14. The strap is left in place to supply 20-Hz negative superimposed ringing to terminals when supply to FADP is 20-Hz negative superimposed ringing.
2	Repeat Step 1 for terminals 5 through 7 by cutting strap E25 to E26.
3	To allow talk battery to be supplied from a source other than that used to supply - 48V office battery to FADP, remove metal connector strap between TB6-3 and TB6-4 on rear of FADP. Strap is left in place to supply talk and - 48V office battery to FADP from same source.
Note: Separate talk battery is necessary only if noise level of - 48V office battery exceeds 40 dBrnC.	

CHART 3 (Cont)

STEP

PROCEDURE

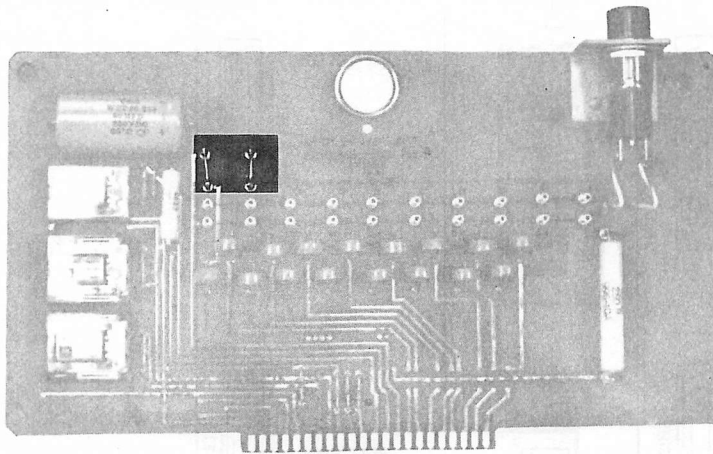


Fig. 1—ABU-2, 628496, Option Locations

- 4 To isolate frame ground shield from ground, cut straps between TB1-C9 and TB1-C10, TB1-D9 and TB1-D10, TB7-C9 and TB7-C10, TB7-D9 and TB7-D10, TB10-C9 and TB10-C10, TB10-D9 and TB10-D10 on rear of FADP. Straps are left in place to ground cable shield.
- 5 To isolate 20-Hz ringing shield from ground, cut straps between TB4-B9 and TB4-B10, TB4-C9 and TB4-C10, TB4-D9 and TB4-D10, TB4-E9 and TB4-E10 on rear of FADP.
- 6 Install ABU-1, 628494, or ABU-2, 628496, in connector in front panel of FADP.

CHART 4

ELECTRICAL INSTALLATION (FADP TO MULTIPLEX SHELF)

APPARATUS:

1—Soldering iron and solder

Standard hand tools as required (see Section ITTR-18-400)

STEP

PROCEDURE

Note: Refer to Fig. 2 during this procedure.

— 48V BATTERY CONNECTION

- 1 Remove multiplex shelf rear cover.

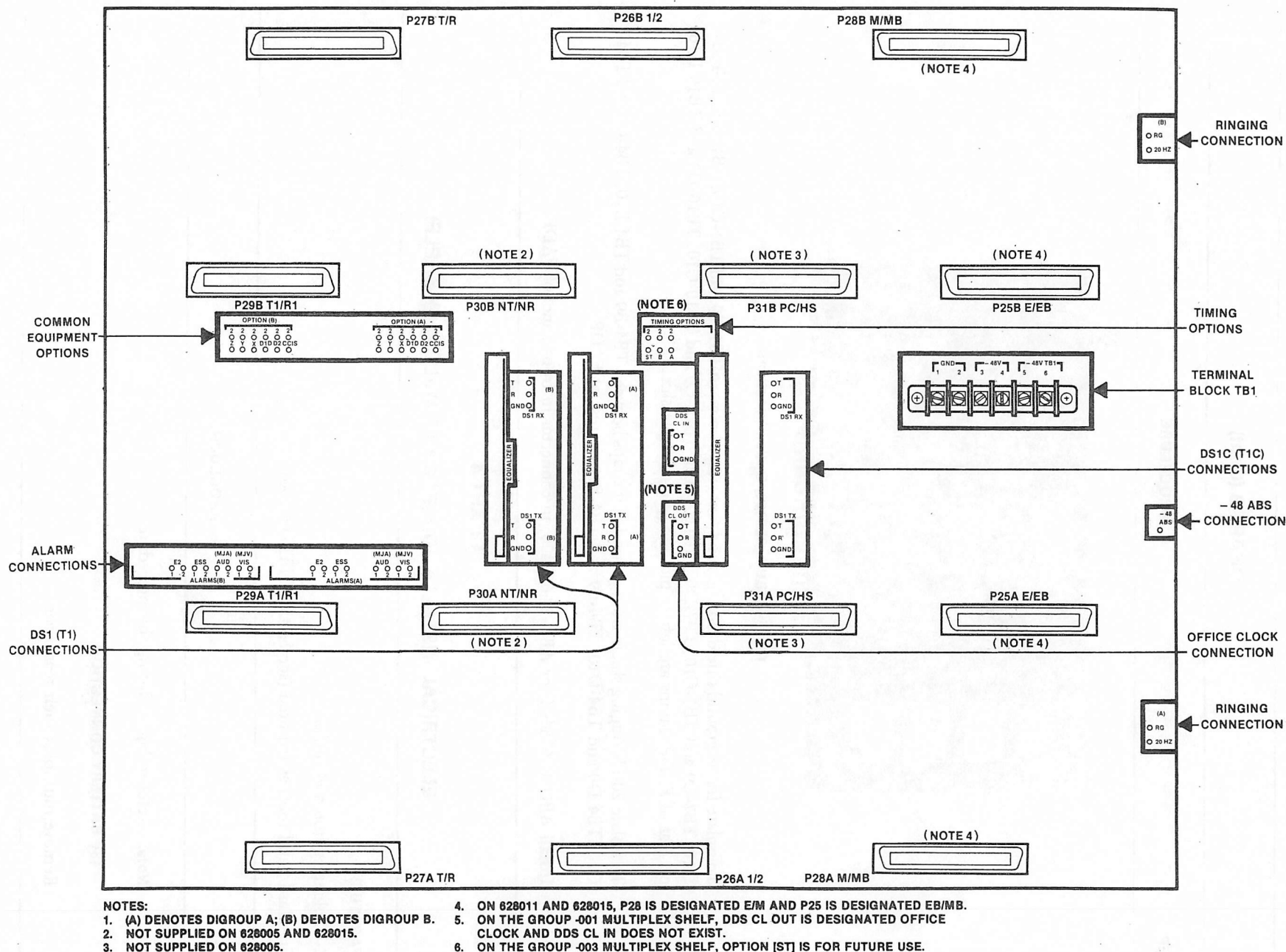


Fig. 2—D448 Backplane Layout

CHART 4 (Cont)

STEP	PROCEDURE
2	On right side of relay rack (rear view), dress 14AWG stranded – 48V power cable between FADP and multiplex shelf. Cut to length.
3	Strip – 48V power cable insulation approximately 1/4 inch on each end and attach 14AWG spade terminals.
4	Connect one end of – 48V power cable to FADP (TB11-1). Connect other end to multiplex shelf (TB1-3).
5	Measure cable run distance between relay rack ground bus and multiplex shelf GND terminal (TB1-1). Cut 14AWG insulated, stranded ground cable to required length.
6	Strip one end of ground cable insulator 1 inch, wrap to relay rack ground bus, and solder.
7	Strip other end of ground cable insulator 1/4 inch, attach 14AWG spade lug, and connect to multiplex shelf GND terminal (TB1-1).
– 48V TALK BATTERY CONNECTIONS	
Note: Separate talk battery is necessary only if – 48V C.O. battery noise level exceeds 40 dBmC. If separate talk battery is not used, proceed to Step 11.	
8	On right side of relay rack (rear view), dress 14AWG stranded – 48V talk battery cable between FADP and multiplex shelf. Cut to length.
9	Strip – 48V talk battery cable insulation approximately 1/4 inch on each end and attach 14AWG spade terminals.
10	Connect one end of – 48V talk battery cable to FADP (TB5-1). Connect other end to multiplex shelf (TB1-5).
– 48 ABS CONNECTION	
Note: Connecting – 48 ABS to the shelf is optional.	
11	Cut 22AWG insulated, solid wire to required length between – 48 ABS supply connection point on FADP (TB8-E10) and – 48 ABS pin on shelf. On FADP, TB8-E10 serves only as a tie point. If desired, – 48 ABS may be wired directly to shelf, bypassing FADP.
12	Connect one end of wire to FADP and other end to multiplex shelf.
20-HZ NEGATIVE SUPERIMPOSED RINGING CONNECTION	
13	Cut 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to required length between FADP (TB4) and ringing connections on multiplex shelf.

CHART 4 (Cont)

STEP

PROCEDURE

- 14 Dress cable through shelf cable tray and along right side of rack (rear view).
- 15 Connect one end of cable to FADP (Fig. 3) and other end to multiplex shelf (Fig. 2).

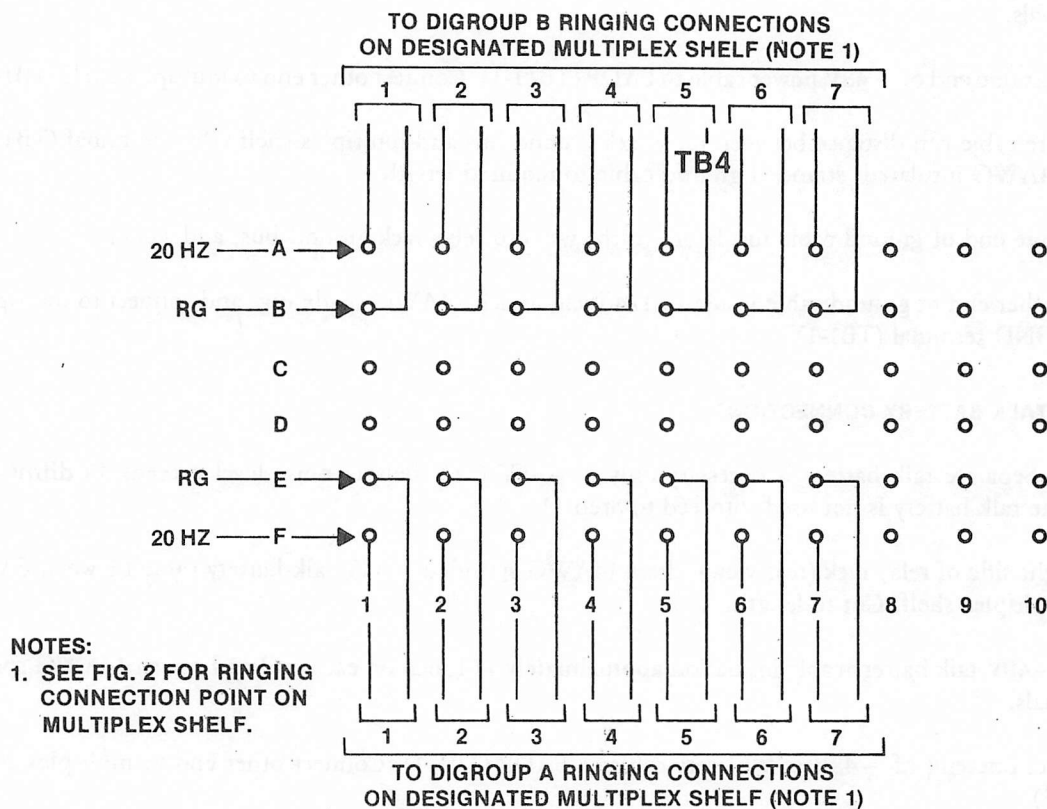


Fig. 3—Ringing Connections from FADP (TB4) to Multiplex Shelf

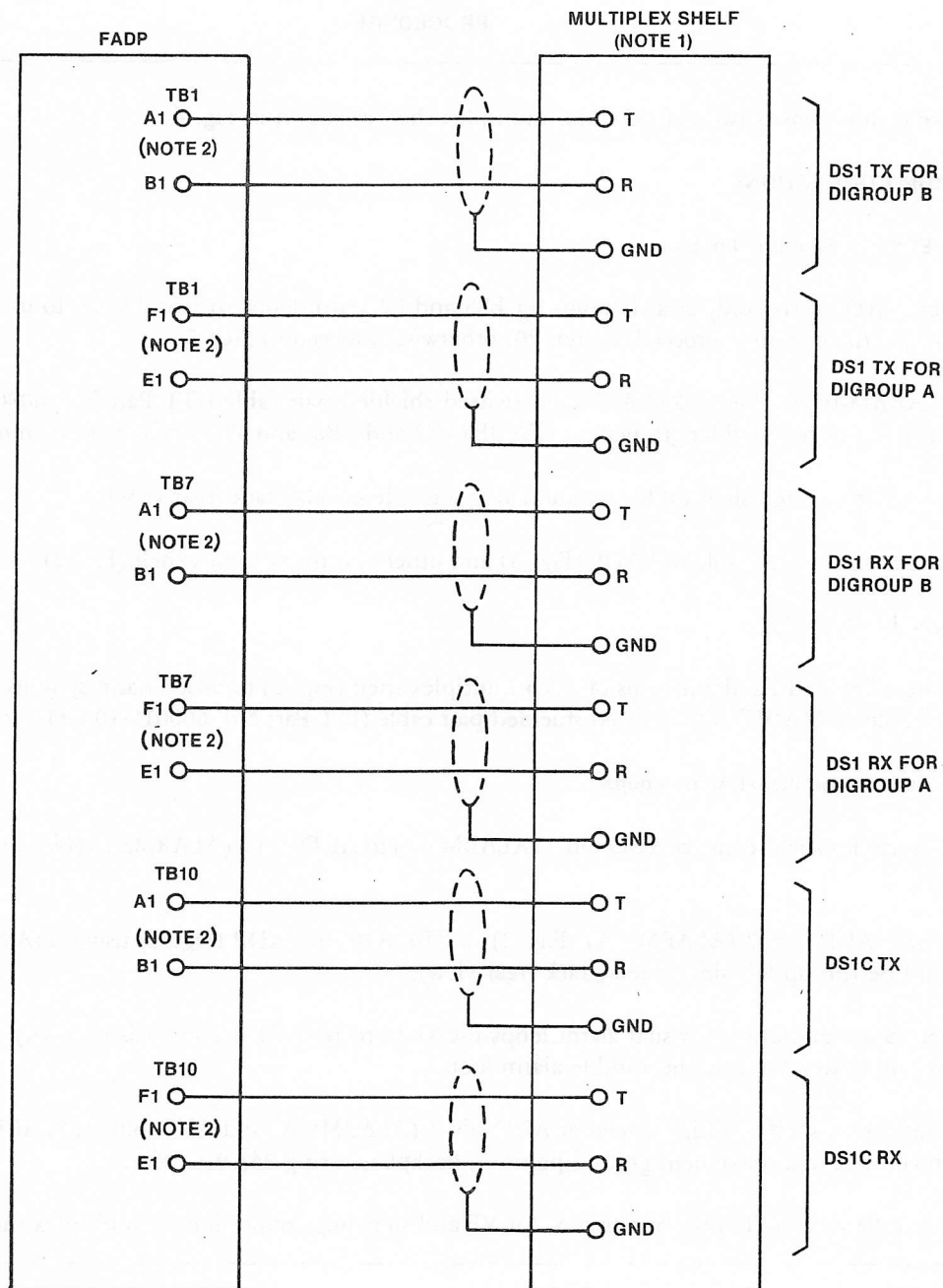
DS1 (T1 HF) CONNECTION (MODE 3 ONLY)

- 16 Cut ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to required length between FADP and multiplex shelf.
- 17 Make connections between FADP and multiplex shelf as shown in Fig. 4.

DS1C (T1C HF) CONNECTIONS (MODE 1 AND 2 ONLY)

Note: Installation of this cable is recommended when Mode 3 operation is being used if other modes are present in the office, future plans require for change out to another mode, or T1C tie points exist.

- 18 Cut ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to required length between FADP and multiplex shelf.



NOTES:

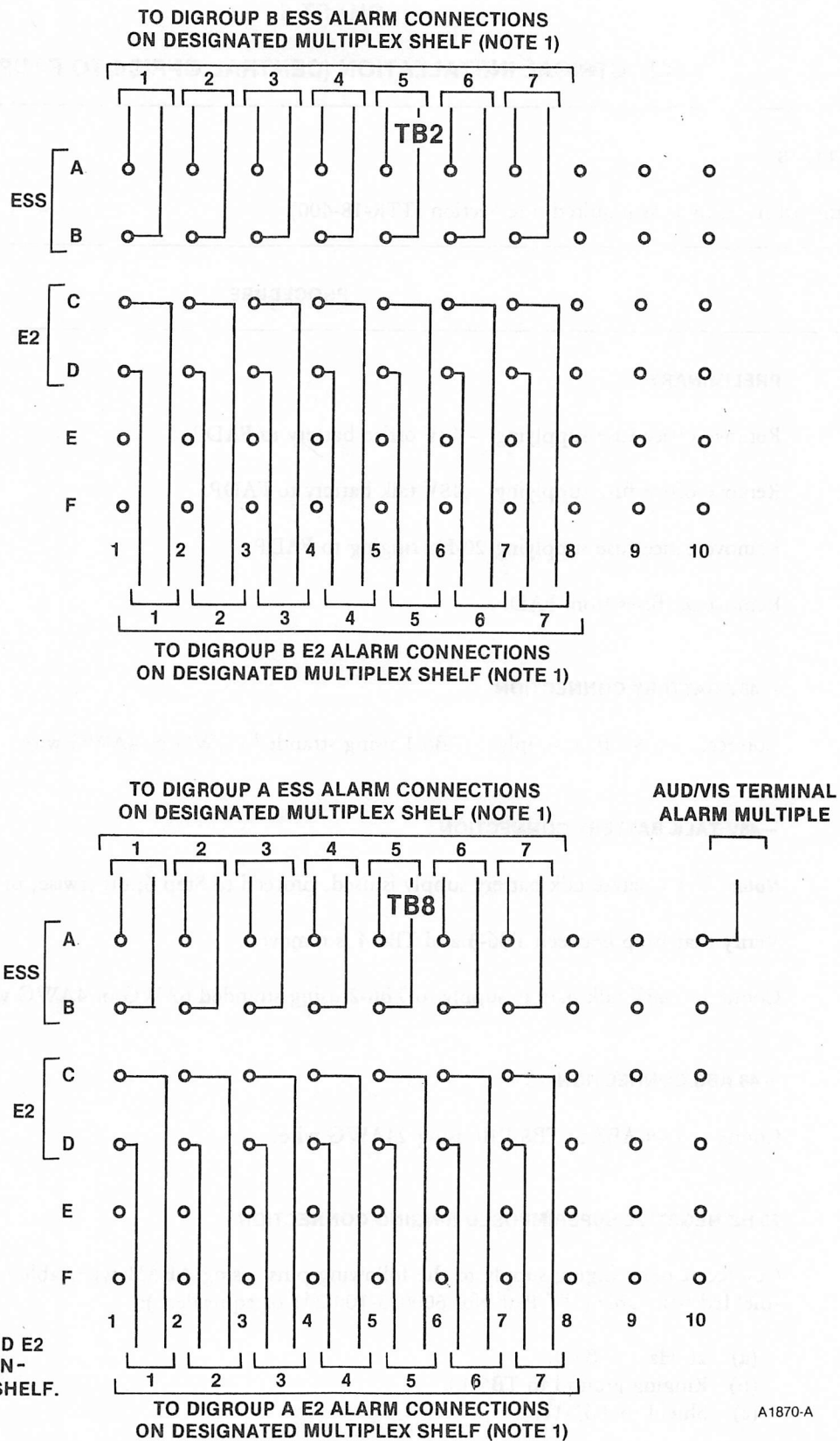
1. SEE FIG. 2 FOR DS1 AND DS1C CONNECTION POINTS ON MULTIPLEX SHELF.
2. CONNECTION POINTS SHOWN ARE TO MULTIPLEX SHELF #1. FOR MULTIPLEX SHELF #2, USE PINS A2, B2, E2, AND F2; FOR MULTIPLEX SHELF #3, USE PINS A3, B3, E3, AND F3; ETC.

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Fig. 4—DS1 and DS1C Connections from FADP to Multiplex Shelf

CHART 4 (Cont)

STEP	PROCEDURE
19	Make connections between FADP and multiplex shelf as shown in Fig. 4.
	ALARM CONNECTIONS
	A. ESS and E2 Alarm Loops
	Note: FADP serves only as a tie point for ESS and E2 alarm loops. If it is desired to use FADP as a tie point for these alarms, proceed to Step 20; otherwise, proceed to Step 24.
20	Cut ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to required length between FADP (TB2 and TB8) and alarm connections on multiplex shelf.
21	Dress cable through shelf cable tray and along left side of relay rack (rear view).
22	Connect one end of cable to FADP (Fig. 5) and other end to multiplex shelf (Fig. 2).
23	Proceed to Step 25.
24	Connect ESS and E2 alarm loops on each multiplex shelf (Fig. 2) to office alarm systems, using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent).
	B. Audible and Visual Alarm Loops
25	On multiplex shelf, connect AUD pin 2 (ALARMS A) to AUD pin 2 (ALARMS B) (Fig. 2) using 24AWG wire.
26	Connect AUD pin 2 (ALARMS A) (Fig. 2) to TB8-A10 on FADP (Fig. 5) using 24AWG wire. Wire should be run up left side of relay rack (rear view).
	Note: Since audible and visual alarm loops use same relay in TPA unit, it is necessary to perform the above procedure for only the audible alarm loop.
27	On multiplex shelf, multiple together AUD pin 1 (ALARMS A) and AUD pin 1 (ALARMS B) (Fig. 2), then connect to a convenient ground point on backplane using 24AWG wire.
28	Refer to Section ITTR-18-405, Chart 5, for VF and signaling connections to multiplex shelf.



NOTES:

1. SEE FIG. 2 FOR ESS AND E2 POINTS ON ALARM CONNECTION MULTIPLEX SHELF.

Fig. 5—ESS, E2, and AUD/VIS Terminal Alarm Connections from FADP (TB2 and TB8) to Multiplex Shelf

CHART 5
ELECTRICAL INSTALLATION (CENTRAL OFFICE TO FADP)

APPARATUS

Standard hand tools as required (see Section ITTR-18-400)

STEP

PROCEDURE

PRELIMINARY

- 1 Remove office fuse supplying – 48V office battery to FADP.
- 2 Remove office fuse supplying – 48V talk battery to FADP.
- 3 Remove office fuse supplying 20-Hz ringing to FADP.
- 4 Remove *all* fuses from FADP.

– 48V BATTERY CONNECTION

- 5 Connect – 48V office supply to TB6-1 using stranded 6AWG or 4AWG wire.

– 48V TALK BATTERY CONNECTION

Note: If a separate talk battery supply is used, proceed to Step 6; otherwise, proceed to Step 8.

- 6 Verify that strap between TB6-3 and TB6-4 is removed.
- 7 Connect – 48V talk battery supply to TB6-2 using stranded 6AWG or 4AWG wire.

– 48 ABS CONNECTION

- 8 Connect – 48 ABS to TB8-E10 using 24AWG wire.

20-HZ NEGATIVE SUPERIMPOSED RINGING CONNECTION

- 9 Connect 20-Hz ringing supply to the following pins, using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent):
 - (a) 20 Hz to TB5-9,
 - (b) Ringing ground to TB5-10,
 - (c) Shield to TB5-11.
-

CHART 5 (Cont)

STEP

PROCEDURE

DS1 (T1 HF) CONNECTIONS (MODE 3 ONLY)

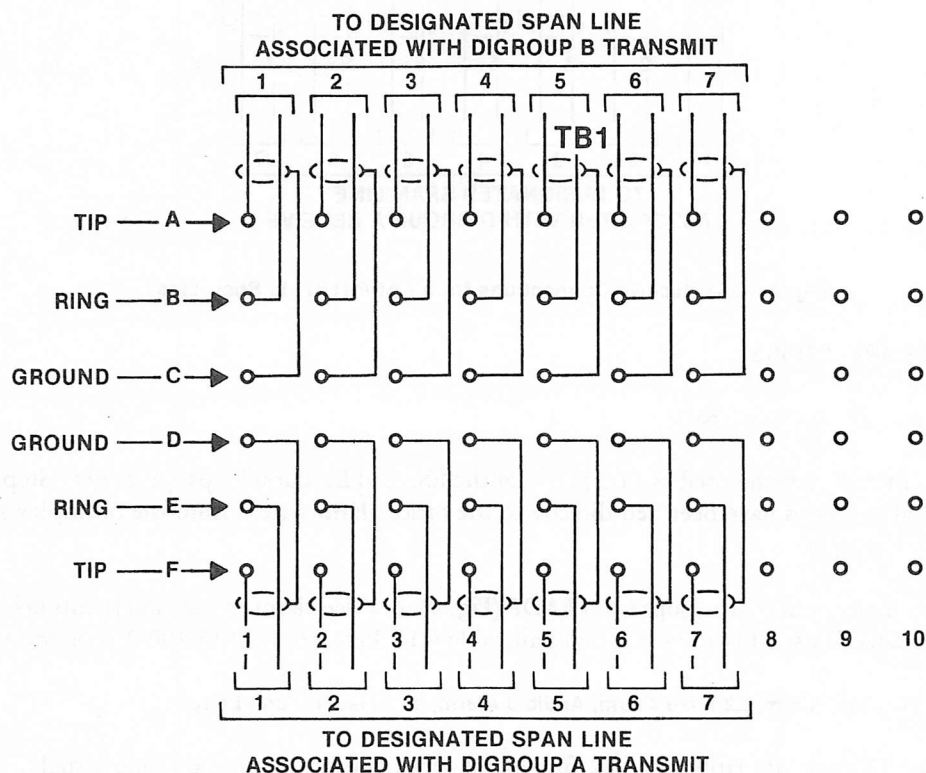
Note: When using twisted, shielded cable, terminate shield at only one end to avoid ground loop and attendant noise problems. Either end of shield may be left "floating" according to local company operating practices.

- 10 Connect DS1 (T1 HF) pairs to TB1 and TB7 as shown in Fig. 6 and 7 using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent).

DS1C (T1C HF) CONNECTIONS (MODES 1 AND 2 ONLY)

Note: Installation of this cable is recommended when Mode 3 operation is being used if other modes are present in the office, future plans call for change out to another mode, and T1C tie points exist.

- 11 Connect DS1C (T1C HF) pairs to TB10 as shown in Fig. 8 using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent).



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Fig. 6—DS1 Transmit Connections from FADP (TB1) to Span Lines

CHART 5 (Cont)

STEP

PROCEDURE

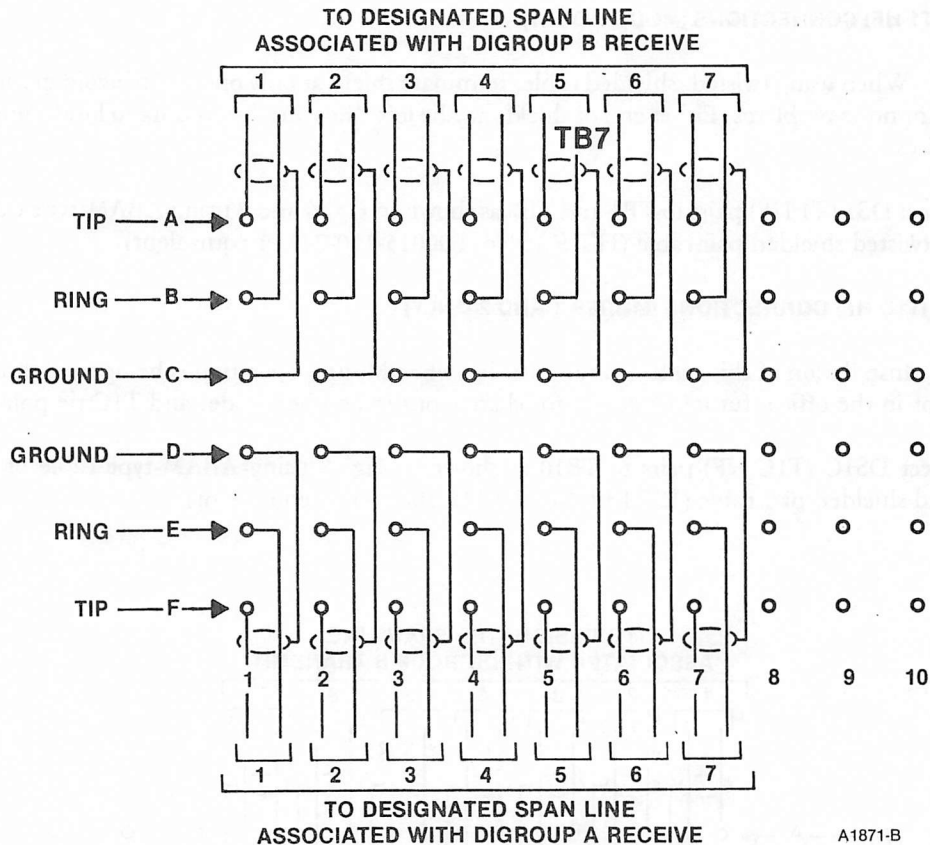


Fig. 7—DS1 Receive Connections from FADP (TB7) to Span Lines

ALARM CONNECTIONS

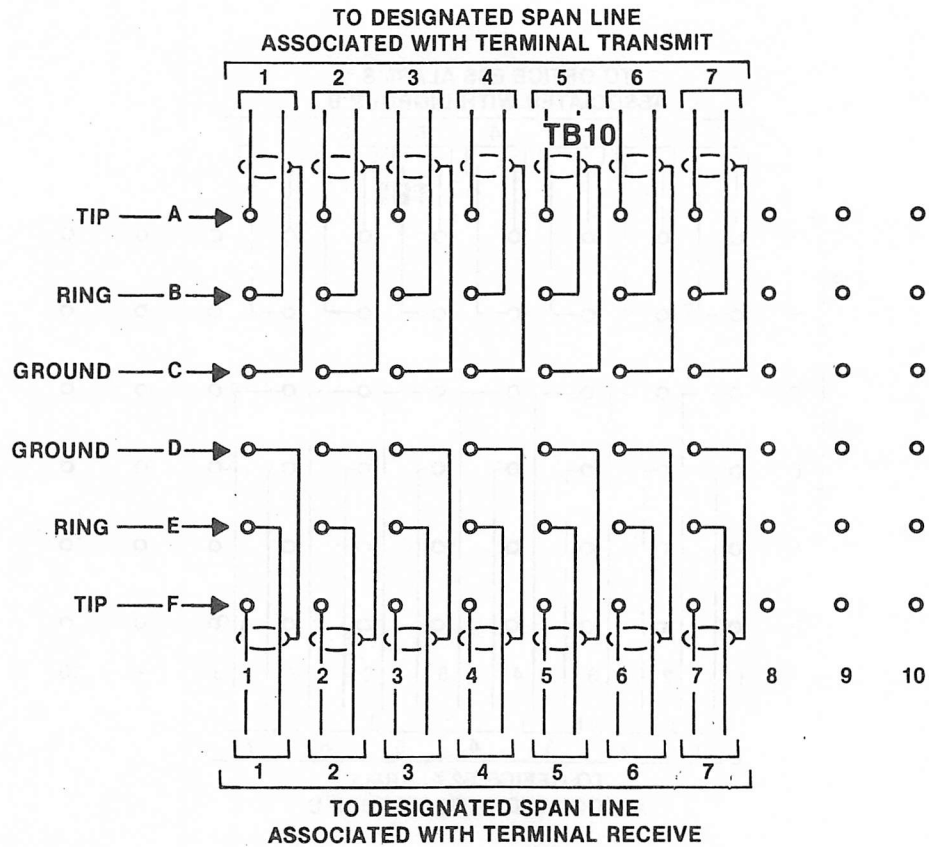
A. ESS and E2 Alarm Loops

Note: If FADP is being used as a tie point for the ESS and E2 alarm loops, proceed to Step 12. If the ESS and E2 alarm loops have been fed directly to the office alarm system from the multiplex shelf (shelves), proceed to Step 13.

- 12 Connect ESS and E2 alarm loops from FADP (Fig. 9) to office alarm connection points using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent).

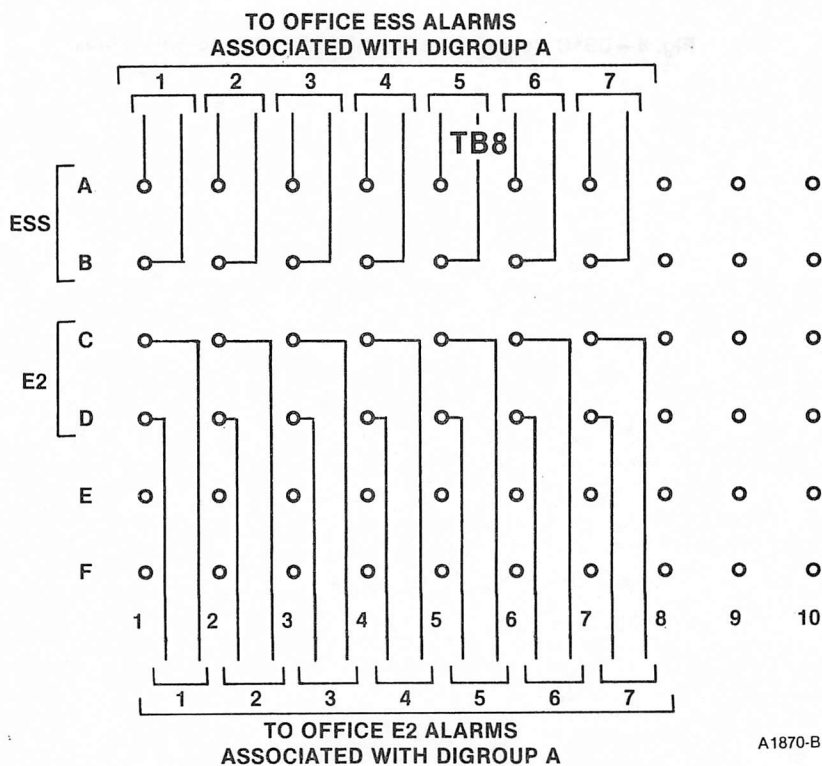
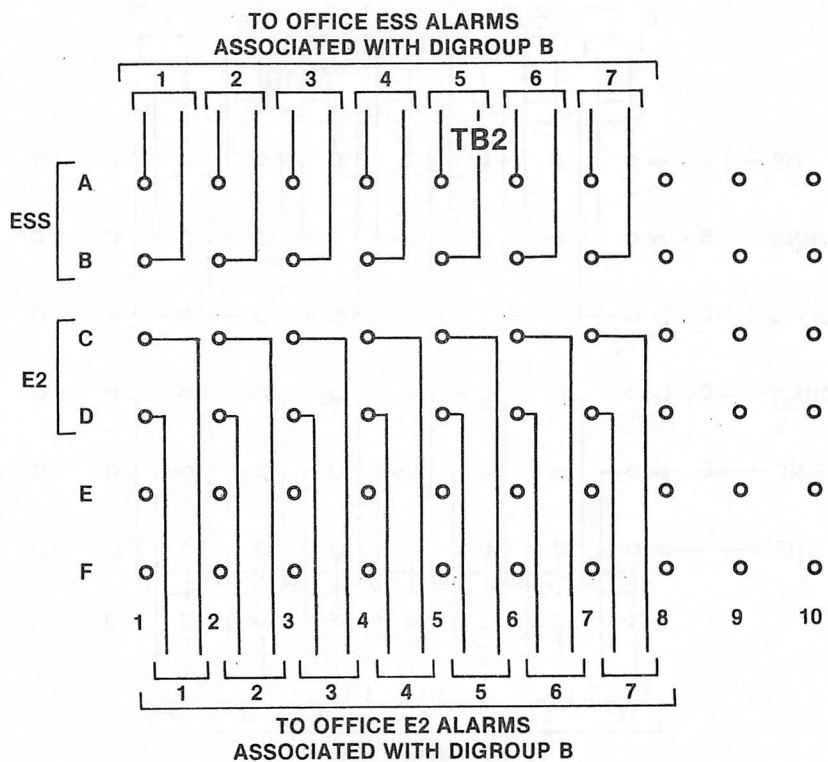
B. E2 Terminal Alarm, E2 Fuse Alarm, Audible Alarm, and Visual Alarm Loops

- 13 Connect E2 terminal alarm loop, E2 fuse alarm loop, audible alarm loop, and visual alarm loop from FADP (Fig. 10) to office alarm connection points, using ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent).



A1871-C

Fig. 8—DS1C Connections from FADP (TB10) to Span Lines



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Fig. 9—ESS and E2 Alarm Connections from FADP (TB2 and TB8) to Office Alarms

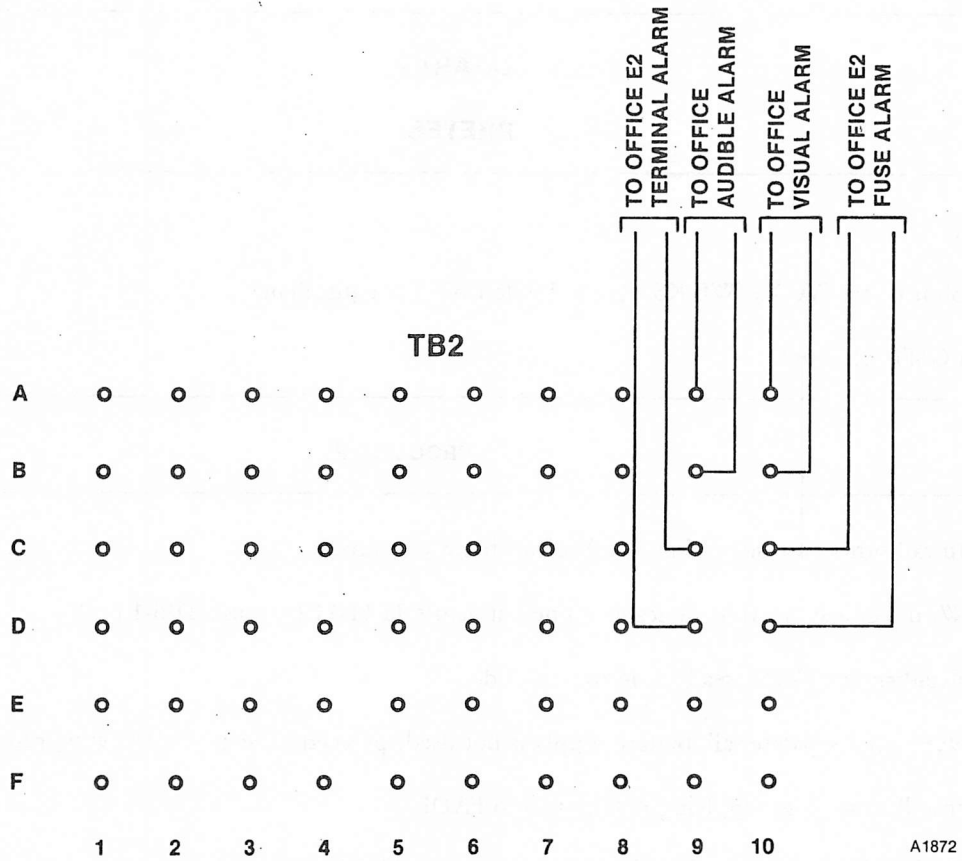


Fig. 10—E2 Terminal Alarm, E2 Fuse Alarm, Audible Alarm, and Visual Alarm Loop Connections from FADP (TB2) to Office Alarm Connection Points

CHART 6

PRETEST

APPARATUS:

1—Volt-ohm meter (VOM) (WE KS-14510, Triplett 630, or equivalent)

1—Open GMT-type fuse

STEP	PROCEDURE
1	Install office fuse supplying – 48V office battery to FADP.
2	With VOM set to volts dc scale, connect it across TB11-11 (+) and TB6-1 (–). Requirement: VOM reads – 44 to – 56 Vdc. Note: If a separate talk battery supply is not used, proceed to Step 5. Otherwise, proceed to Step 3.
3	Install office fuse supplying talk battery to FADP.
4	With VOM set to volts dc scale, connect it across TB11-11 (+) and TB6-2 (–). Requirement: VOM reads – 44 to – 56 Vdc.
5	Install office fuse supplying 20-Hz ringing or 20-Hz negative superimposed ringing to FADP.
6	With VOM set to volts ac scale, connect it across TB5-9 (+) and TB5-10 (–). Requirement: With ABU-1, 628494, VOM reads 80 to 160 Vrms. With ABU-2, 628496, VOM reads 130 to 160 Vrms.
7	Install main fuses F1, F2, and F3 in FADP.
8	Insert an open GMT-type fuse into position F4 on FADP. Requirement: ALARM indicator on ABU turns on and office audible and visual alarm contacts in ABU are activated.
9	Repeat Step 8 for positions F5 through F26. Requirement: ALARM indicator on ABU turns on and office audible and visual alarm contacts in ABU are activated.
10	Install 1-1/3A GMT-type fuses (color code white) in positions F14, F15, and F16.

CHART 6 (Cont)

STEP

PROCEDURE

- 11 Install 7-1/2A GMT-type fuse (color code black/white) in position F12.

Note 1: The 20-Hz ringing fuse (F13) can be either a 0.18A or a 1A fuse. Most applications would call for the 0.18A fuse. Use of the 0.18A fuse inhibits thermistor protection normally provided by ABU. Consequently, a ringing failure in any multiplex shelf will open the 0.18A fuse and cause a loss of ringing supply to all other shelves fused by FADP. If thermistor protection is desired, the 1A fuse should be used. A ringing failure in any multiplex shelf digroup is protected by a thermistor and will result in a ringing failure of the affected digroup only.

Note 2: Under no circumstances should the rating of the 20-Hz ringing fuse exceed that of office ringing supply.

- 12 Select appropriate 20-Hz ringing fuse (F13) from the 20-Hz ringing fuse installation kit, 628490-018-001, supplied with the FADP per the above notes and install it in position F13.

- 13 Stick corresponding color dot (0.18A - yellow; 1A - gray) to front panel of FADP directly over black color dot under position F13.

Note: Do not install fuses in remaining positions F4 through F11 and F17 through F26 at this time. Fuses should be installed when power is needed for associated multiplex shelf or when required in the case of spare positions.
